REMARKS

Examiner D. Owens is thanked for the thorough examination and search of the subject Patent Application. Claims 11 and 26 have been amended, Claims 1-5, 7-10, and 14 have been canceled, and new claims 42-51 have been added.

New claims 42-51 are similar to claims 11-25 except that claim 42 incorporates the specific attaching details from dependent claim 21.

The making final of the restriction requirement is noted. Claims 1-5 and 7-10 are hereby canceled. A divisional application to the canceled claims will be filed once a Notice of Allowance is received for the instant claims.

All Claims are believed to be in condition for Allowance, and that is so requested.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 11-15, 17, 19, 20, 22-32, 34-37, and 39-41 as being unpatentable over Akram et al in view of Fanworth is requested in view of Amended Claims 11 and 26 and in accordance with the following remarks.

Claim 11 has been amended to incorporate the specific substrate material of claim 14. Applicants have argued that the very thin substrate attached to a chip or wafer by a very thin adhesive is not disclosed or suggested in the references. In paragraph 7 of the office action, the Examiner says that these features are not recited in the rejected claims. However, Claim 11 recites the thicknesses of the substrate – 100 to 300 μm – and the adhesive layer – 50 to 100 μm. For example, in 6,064,114 to Higgins cited in the Specification, the substrate is 500 μm in thickness. Applicants' substrate thickness is much thinner than this. An adhesive layer thickness has not been found in the references. It is agreed that Fanworth teaches a molding material of epoxy resin. It is believed that neither Akram et al nor Fanworth teach or suggest the very thin substrate and adhesive layer achieved by the process of Applicants' invention.

Claim 26 includes the adhesive layer thickness. Claim 26 has been amended to claim the specific order of steps included in the second embodiment of Applicants' invention. The Examiner is thanked for pointing out that this order of steps was not recited in the claims. It is believed that the amendment to Claim 26 renders the second embodiment claims 26-41 patentable over the references. The references do not teach or suggest first forming an adwafer, sawing the wafer, and then attaching the die to the substrate to form the chip scale package.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 11-15, 17, 19, 20, 22-32, 34-37, and 39-41 as being unpatentable over Akram et al in view of Fanworth is requested in view of Amended Claims 11 and 26 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 21 and 38 as being unpatentable over Akram et al and Fanworth in view of Yamamoto et al is requested in view of Amended Claims 11 and 26 and in accordance with the following remarks.

Yamamoto et al teaches a process of attaching cut pieces of adhesive film to a wiring substrate (col. 9, lines 29-41). It is agreed that the temperature range of attachment of Yamamoto et al overlaps slightly with Applicants' range. Yamamoto et al teaches a range of 30 to 250 °C while Applicants teach a range of 250 to 350 °C. While both teach a temperature of 250 °C, Yamamoto et al teaches away from Applicants' claimed range. In col. 9, lines 38-41, Yamamoto et al says that a temperature above 250°C is undesirable. Thus, it is not agreed that Applicants' invention is unpatentable over the combination of references.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 21 and 38 as being unpatentable over Akram et al and Fanworth in view of Yamamoto et al is requested in view of Amended Claims 11 and 26 and in accordance with the remarks above.

Allowance of all Claims is requested.

MEG-00-012

Attached hereto is a marked-up version of the changes made to the Claims by the current amendment. The attached pages are captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

It is requested that should Examiner Owens not find that the Claims are now Allowable that he call the undersigned at 765 453-0866 to overcome any problems preventing allowance.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend the claims as follows:

Please cancel Claims 1-5 and 7-10.

11. (AMENDED) A method of forming a chip scale package (CSP) comprising the steps of:

providing one or more chips having I/O pads with UBM layer on the surface of said I/O pads;

providing a substrate comprising bismaleimide triazine (BT) and having a thickness between about 150 to 300 μm;

applying an adhesive layer with a thickness between about 10 to 100 μm over said substrate, thus forming an adsubstrate composite;

forming openings in said adsubstrate composite to match the spacing of corresponding said I/O pads of said chip;

attaching said chip(s) on said adsubstrate composite wherein said I/O pads of said chip(s) are placed on the corresponding openings on said adsubstrate composite to form a package;

forming a molding material around said package;

performing ball mounting over said openings on said adsubstrate of said package; and

sawing said substrate to form said CSP.

Please cancel Claim 14.

26. (AMENDED) A method of forming a chip scale package (CSP) comprising the steps of:

providing a wafer having a plurality of chip sites with I/O pads;

forming an under-ball metal (UBM) layer over said I/O pads;

forming an adhesive layer over said UBM layer on said wafer to form an adwafer;

forming openings in said adhesive layer on said adwafer to reach said I/O pads underlying said UBM layer;

thereafter die sawing said adwafer to form said chip scale package (CSP)

providing a substrate having openings corresponding to said I/O pads;

thereafter attaching said CSP with said adhesive to said substrate; and

thereafter forming ball mountings on said openings on said substrate to attach to said I/O pads on said CSP.